HPB-SMU Collaboration for custom GIS application Proof-Of-Concept development

Draft requirements

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Objectives

- To build an application that utilises GIS functions for geospatial planning and analysis with specific purposes:
  - Computation and analysis of HPB KPI reporting metrices
  - Health Promotion programme and outreach planning

- The application should be suitable for lay-users with no prior training of GIS software to pick-up fast and and use with ease
  - Target users are actual HPB programme and outreach executives (with little or no background in GIS analysis), for their use in planning and operations

*Draft for discussion

Scope and Schedule

- Potentially 2 phases

- Proof-of-concept phase (Approx. 3 months):
  - Prototype software on standalone machines to assess concept feasibility and also gather feedback

- Implementation (Approx. 3 months):
  - Upon success of Proof-of-concept phase
  - Roll-out with server and client access implementations
  - Database within server to store data
  - Capability for both standalone analysis and common access/sharing of data and results

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Requirements

	Draft Functional Requirements
Input	- Upload shape files as layers and capability to perform joins - Upload Excel/CSV/text files containing postal codes of features of interest (e.g. CC, parks) - Geocoding capabilities to generate shape files/layers from uploaded postal codes, together with corresponding attributes - Different alternatives to features mapping e.g. mapping by coordinates/ add point to layer by clicking then manually input details - Form to input general parameters on resident population (e.g. no. of HDB dwelling units) for analysis - Upload attendance/participation for programmes run at different venues - Capability to overlay Google Maps, Openstreetmap layers - SVY21 + lat-lon CRS enabled
Visualisation	- Capability to overlay and view different layer combinations, with ability to view/hide layers via simple switches (e.g. checkboxes) - Icon selection to differentiate between features from each layer - Search function based on postal code to enable greater zoom-in and analysis of a layer - Attribute display for each feature upon mouseover; capability to select desired attributes and display for all features on map concurrently - Capability to filter and highlight features with user-defined selection criteria - Capability to classify points on map (e.g. with different color) according to different user defined categories - Heat map generation

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Requirements

	Draft Functional Requirements
Processing	- Buffer size definition, visual display and computation for analysis (e.g. 2km around each HDB block) - Select and define the layers/combination for computations to be done (e.g parks and fitness corner, gym and swimming pools etc) - Compute KPI based on algorithm (e.g. % residents have access to health promoting options) - Display in charts against the KPI what is the takeup rate/utilization rate - Standard Geoprocessing tools e.g. intersect, dissolve, union
Output	- Display results of computation - Print maps/files - Export results of computations into Excel/CSV/text format

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Computation for KPI reporting

- KPI: % of residents with access to health promoting options with x km

- Data provided
  - List of HDB blocks (postal code) with number of dwelling units
  - Different layers of health promoting options included (e.g. smoking cessation touchpoints, healthier dining outlets, etc.)

- Current computation needed:
  - For each HDB block
    - Check whether it has met criteria of having list of health promoting options (e.g. at least 1 CC with 2km, 1 healthier dining option within 400m etc.)
    - If the block has met the criteria, check no. of dwelling units in that particular block and add towards total no. of dwelling units that have access
  - Divide total dwelling units with access to health promoting options with x km

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Example of KPI computation input options

Population parameters

Population
Total no. of HDB dwelling units   948044   (assuming HDB residents only)

Specify buffer distance

Priority Area

Layers

Obesity Prevention – Nutrition – Healthier Dining Options	INPUT		At distance (m)
At least ≥	0	Healthier Dining (All healthier dining)	2000
At least ≥	1	Healthier Dining – Restaurants OR Fast food	800
At least ≥	0	Healthier Dining – Restaurants	400
At least ≥	0	Healthier Dining – Fast Food	2000
At least ≥	1	Healthier Dining – Food court	2000
At least ≥	1	Healthier Dining – Coffeeshop	2000
At least ≥	0	CC/RC offering healthier cooking demo or supermarket tour programmes	2000
% of residents have access	47.6%		

Obesity Prevention – Physical Activity	INPUT		At distance (m)
At least ≥	0	Sundays at the Park programme	400
At least ≥	0	CC/RC have physical activity programmes	2000
At least ≥	0	Shopping malls have physical activity programme	2000
At least ≥	0	Community Physical Activity programme (SATP or Shopp	800
At least ≥	1	Physical activity facilities (SSC Sports Facilities, Gyms@SG, Water ventures, Parks@SG)	2000
At least ≥	1	(Add 3 parks) Community Physical Activity programme (S	2000
% of residents have access	71.2%		

Overall

% of residents with access to health promoting options within specified distance	33.6%

Output

Main inputs: Defining criteria for health promotin options

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